

Hazardous Material Program

LG #10

A. Background

Definition

- **Hazardous Material (HM)**

Any material that, because of its quantity, concentration, or physical or chemical characteristics, may pose a substantial hazard to human health or the environment when incorrectly used, purposefully released, or accidentally spilled.

HM Subcategories

- **Acids**
- **Adhesives**
- **Alkalies/Bases/Caustics**
- **Cleaning compounds**
- **Compressed gases**
- **Corrosion preventive compounds**



HM Subcategories

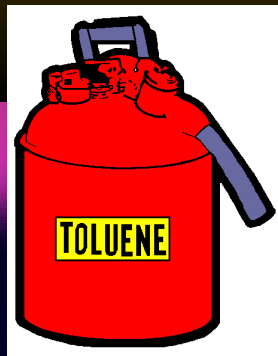
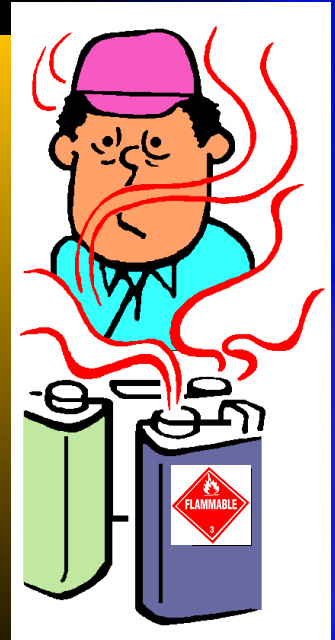
- **Detergents/Soaps**
- **Greases**
- **Hydraulic fluids**
- **Inspection penetrants**
- **Lubricants/oils**
- **Paints**





HM Subcategories

- **Photo chemicals**
- **Polish/Wax compounds**
- **Solvents (hydrocarbons)**
- **Thermal insulation**
- **Water treatment chemicals**
- **Oxidizers**



HM Subcategories

- **Fuels**
- **Heavy metals**
- **Batteries**
- **Pesticides**

Materials NOT Included in HM Program

These are covered under separate directives

- Ammunition**
- Weapons**
- Explosives**
- Propellants**
- Pyrotechnics**
- Chemical & Biological warfare materials**



Materials NOT Included in HM Program

- **Pharmaceutical supplies**
- **Medical wastes & infectious materials**
- **Bulk fuels**
- **Radioactive materials**

Note: Asbestos and Lead also require special guidance for handling & control. They are addressed in Chapters B1 and B10 respectively.

Used or Excess HM

HM for which there is no further, immediate use on board the ship possessing the material

- Used HM**

- **Material used in a shipboard process**

- Excess HM**

- **Unused material in full, properly sealed containers**
 - **May be used on another ship or shore activity**

Hazardous Waste (HW)

Any discarded material which meets definition of HM and/or designated HW by EPA or State authority

- **Shore activity determines if material is HW**
 - PWC in charge of waste disposal
- **Shore activity acts as HW generator**

Note: Under the Federal Facilities Compliance Act of 1992, ships are not subject to HW requirements. Ships therefore do not generate HW.

The Right-to-Know Law

- **From OSHA's Hazard Communication Standard**
- **Applies to all U.S. employees, and Federal civilian & military personnel worldwide**
- **Every employee has right to know**
 - **About workplace hazards**
 - **About hazard protection**



OSHA

Occupational Safety & Health Administration
U.S. Department of Labor

Hazard Communication Standard

- **Affects manufacturers of HM**
- **Affects the employers who purchase HM**
- **Affects employees who use HM**

Hazard Communication Standard

- **Manufacturers must properly label HM & provide Material Safety Data Sheet (MSDS) for each HM produced**
- **HM user--**
 - **Must be familiar with hazards & precautions**
 - **Must be familiar with MSDS**
 - **Must use and understand HM labels**

Hazard Communication Standard

- **Regulations apply to forces afloat. OPNAVINST 5100.19 (series), Chapters B3, C23, and D15 provide all applicable information**

B. Labeling of HM

Labeling of HM

- **Provides shipper/handler/user with information on HM**
- **Every container of HM must be labeled**
- **Label requirements--**
 - **Identity of material or chemical**
 - **Name & address of manufacturer or responsible party**
 - **Appropriate hazard warning, including target organs**

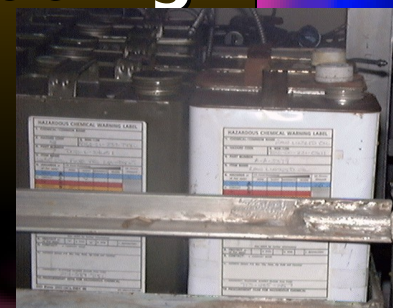
DoD Hazardous Chemical Warning Label

- **DD2521/2522--Used to label**
 - HM from dispensing operations
 - Unlabeled containers
 - Tanks
 - Containers where label destroyed or damaged

HAZARDOUS CHEMICAL WARNING LABEL																											
1. CHEMICAL / COMMON NAME																											
2. HAZARD CODE		3. NSN / LSN																									
4. PART NUMBER																											
5. ITEM NAME																											
6. HAZARDS (if all that apply)																											
<table border="1"><thead><tr><th></th><th>(1) Acute (Immediate)</th><th>(2) Chronic (Delayed)</th></tr><tr><th></th><th>NONE</th><th>SUSPECT</th><th>MODERATE</th><th>SEVERE</th></tr></thead><tbody><tr><td>7. HEALTH</td><td></td><td></td><td></td><td></td></tr><tr><td>8. CORRUPT</td><td></td><td></td><td></td><td></td></tr><tr><td>9. REACTIVE</td><td></td><td></td><td></td><td></td></tr></tbody></table>						(1) Acute (Immediate)	(2) Chronic (Delayed)		NONE	SUSPECT	MODERATE	SEVERE	7. HEALTH					8. CORRUPT					9. REACTIVE				
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9. REACTIVE																											
7. SPECIFIC HAZARDS AND PRECAUTIONS (including Target Organ Effects)																											
(See AFDS for further information)																											
8. PROTECT (if all that apply)																											
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9. CONTACT																											
9. CONTACT: a. COMPANY NAME																											
10. ADDRESS (Name, P.O. Box, City, State, Zip Code and Country)																											
11. EMERGENCY TELEPHONE NUMBER (include Area Code)																											
12. PROCUREMENT YEAR FOR HAZARDOUS CHEMICAL																											
DD Form 2522 (1C), DEC 88																											

Labeling of Dispensed HM

- If HM is dispensed into an unmarked container, it must be labeled with the following information:
 - Identity of material or chemical
 - Name & address of manufacturer or responsible party
 - Appropriate hazard warning, including target organ
- Use DD2521/2522 labels



Other HM Labels

- **National Fire Protection Association (NFPA) 704M diamond**



- **Department of Transportation (DOT) Labels**



Note: NFPA and DOT labels may NOT be used as stand-alone labeling systems, but may be used in conjunction with other labeling systems

C. Material Safety Data Sheets (MSDS)

MATERIAL SAFETY DATA SHEET	
SECTION 1	SECTION 5: REACTIVITY DATA
SECTION 2: HAZARDOUS INGREDIENTS IDENTIFICATION INFORMATION	SECTION 6: HEALTH HAZARD DATA
SECTION 3: PHYSICAL CHEMICAL CHARACTERISTICS	SECTION 7: PRECAUTIONS FOR SAFE HANDLING AND USE
SECTION 4: FIRE AND EXPLOSION HAZARD DATA	SECTION 8: CONTROL MEASURES

FRONT **BACK**

MSDS

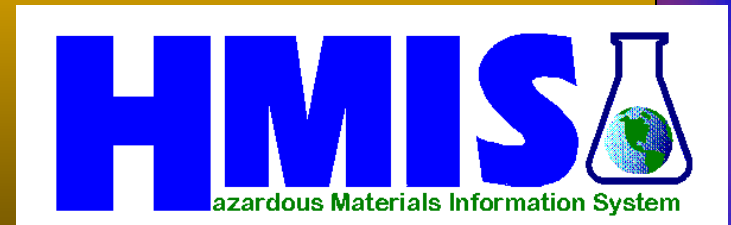
- **Technical bulletins containing information about the hazardous material**
- **Shall be in English and contain at least the following information:**
 - **Identity of material**
 - **Hazardous ingredients**
 - **Physical and chemical characteristics**

MSDS Information

- Physical hazards (fire, explosion, reactivity)**
- Health hazards (routes of entry, exposure limits, and cancer potential)**
- Precautions for safe handling & use**
- Emergency first aid procedures**
- MSDS preparation date**
- Name, address & phone number of chemical manufacturer, importer, employer who can provide additional information**

Hazardous Material Information System (HMIS)

- **Compilation of MSDS applicable to DoD**
- **Available on CD-ROM**
- **Also contains**
 - **HM User's Guide (HMUG)**
 - **Ships' HM List (SHML)**
 - **Shipboard Safety Equipment Shopping Guide**



MSDS Requirements

- **Maintained for every item of HM aboard**
 - **Through HMIS**
 - **Hardcopy**
- **Readily accessible to personnel who use HM**
- **Supervisors provide instruction in understanding and use**
- **All personnel trained on dangers and precautions of HM prior to use**

D. Program Responsibilities

Division Officers

- **Ensure HM maintained in workcenters specific to operations**
- **Ensure no more than 7-day supply of HM maintained**
- **Ensure used/excess HM returned to Hazardous Material Minimization Center (HAZMINCEN)**

Division Officers

- **Ensure PPE available for HM operations and personnel trained on use**
- **Make personnel available to receive HM training**
- **Ensure use of NAVSEA-approved storage lockers**

HM Supervisor

- **Provide control and management of ship's HM**
- **Maintain HMIS & hard copy MSDS**
- **Ensure receipt & consolidation of used HM**
- **Ensure HAZMINCEN personnel trained**
- **Ensure HM is labeled when dispensed into other containers**

All Hands

- **Return HM to approved stowage or HAZMINCEN**
- **Properly use and handle HM**
- **Report spills to OOD or DC Central**
- **Report violations of HM use, storage, handling to supervisor**
- **Label HM when dispensed into other containers**

E. HM Handling

General Requirements

- **Ensure personnel trained on hazards associated with HM**
- **Ensure supply & exhaust ventilation maintained where HM used, and in good operating condition**
- **Never store excess HM in work areas. Return to storage area or HAZMINCEN**

General Requirements

- **Handle incompatible materials in separate compartments to prevent mixing**
- **Never mix incompatible materials in the same collection containers**
- **Avoid breathing vapors or dust from HM**
- **Avoid contact with eyes and skin**
- **Prohibit smoking, eating, & drinking where HM used**

General Requirements

- **Ensure PPE readily available and in good operating condition**
- **Eye protection for irritants & corrosives shall consist of chemical goggles and full face shield**
- **Ensure Gas Free Engineer tests spaces closed for significant periods of time**
- **Use appropriately selected & fitted respirator as necessary**

HM Handling References

- **HMUG (OPNAV P-45-110-96)**
 - **Divided into 22 groups**
 - **Each section contains information on**
 - **Control measures**
 - **Precautions**
 - **Health hazards**
 - **Spill controls**
 - **Disposal guidelines**
 - **Available in hard copy or on HMIS CD-ROM**

HM Handling References

- **MSDS**
- **HMIS**
- **OPNAVINST 5100.19 (series)**
 - Chapter C23 (Afloat)
 - Chapter D15 (Submarines)
- **NSTM 670**

HM Handling References

- **Federal Logistics Data (FEDLOG)**
- **Hazardous Material Inventory Control System (HICS)**
- **CNO Policy Guide for Shipboard Hazardous Material Container Disposal (OPNAV P-45-114-95)**

F. HM Storage

Storage

Materials normally thought to be safe may become hazardous under certain conditions. When containers leak or are heated, chemical reactions may result, leading to fire, explosion, or release of toxic reaction products.

- **Stowage must be accomplished such that incompatible materials are segregated and separated.**

Storage Requirements

- **Material with flash points <200° F stored in flammable storerooms, ready service storerooms, or issue rooms**
 - **Store coolants, lubricants, aerosols, hydraulic fluids there, also.**
- **Post HM stowage locations with caution signs**
- **Ensure lockers and cabinets used for in-use flammable storage labeled**

Storage Requirements

- **Mark stowage compartments to identify type of HM stored**
- **Do not transfer material to any container used for a different material**
 - **Might be incompatible!**
- **Stow incompatible materials in separate compartments to prevent mixing during spill event**

Storage Requirements

- **Stow HM in compatible containers**
 - **No corrosives in metal drums!**
- **Stack containers so as to avoid crushing lower containers, or access difficulty**
- **Issue material on first-in, first-out basis**
 - **Consider shelf-life**
- **No eating, smoking, drinking in stowage locations**

Storage Requirements

- **No open flames or sparking devices in stowage areas**
- **Use only explosion-proof devices in potentially explosive environments**
- **Maintain explosion-proof fixtures in proper condition**
- **Seal & protect containers against physical damage**

Storage Requirements

- **Do not stow HM in spaces not designated for HM stowage**
- **Ensure Gas Free Engineer (GFE) monitors stowage locations any time questions arise as to safety of compartment**

Determining Storage Requirements

- **Is HM compatible with other chemicals?**
- **What is the hazard classification?**
 - **Oxidizer, acid, flammable, base, etc.**
- **How much will be kept on-hand as in-use working stock?**
- **Any special storage requirements on MSDS?**
- **What is the flash point of the material?**

G. Disposal of Hazardous Material

Purpose of Proper HM Disposal

- **Avoid damage to the environment**
- **Avoid hazards to personnel**
- **Minimize workload**
- **Comply with applicable regulations**
 - **OSHA**
 - **EPA**



OSHA

Occupational Safety & Health Administration
U.S. Department of Labor



EPA United States
Environmental Protection Agency

Excess HM

- **May be turned into Supply dept., Defense Reutilization and Marketing Office (DRMO), or another ship**
 - **Material must be unopened, clean condition, no damage to the container**
 - **DD 1348-1 must be completed to return materials to supply center or DRMO**

Collection of Used HM

- **Shall be segregated**
- **Container filled with one type of HM**
 - **Don't mix materials**
- **Use original container, if possible**
 - **If not, use compatible container from selection in Appendix C23-A**
 - **If containers damaged, use “over-pack” container**

Collection of Used HM

- **Container securely sealed**
- **Container stowed in appropriate location**
 - **Follow storage precautions for compatible materials**
- **Follow the requirements of NSTM 593 for oily waste, used oil, & waste oil**

Collection of Used HM

- **Ensure container properly labeled**
 - **Use label from Appendix C23-B of OPNAVINST 5100.19 (series)**

USED	
SHIP _____	WORK CENTER _____
NAME OF MATERIAL _____	
PROCESS IN WHICH MATERIAL USED _____	

ANY KNOWN IMPURITIES _____	
SPECIAL STOWAGE REQUIREMENTS _____	
DIVISION OFF. SIGNATURE _____	DATE _____
HAZARDOUS MATERIAL	
OPNAV 5100/18 (DEC 1993)	

Off-Loading Used/Excess HM

- **HM Supervisor responsible for receipt, consolidation, & turn over to shore facility**
- **Ships with HAZMNCEN used as collection point for used HM**
- **DD 1348-1 prepared for each container of used HM**
- **Hard copy MSDS supplied if not available on HMIS**

H. Hazardous Material Spills

- **Information on spill response can be found in Lesson Guide 11**